

ART. V.—*Description of a New Species of Cypridina  
from Hobson's Bay, Melbourne.*

By F. CHAPMAN, A.L.S., &c.

(With Plate IX).

[Read 13th December, 1906.]

PRELIMINARY REMARKS.

The species now described, although hitherto not specifically determined, is one of the most abundant of the Ostracoda inhabiting Hobson's Bay and the adjacent waters of Port Phillip. In the "Victorian Naturalist" for 1894,<sup>1</sup> Mr. J. Shepherd gave an interesting account of the phosphorescence caused by an ostracod, in all probability the present species, off Brighton Beach, Port Phillip. In this notice it was stated that the light emitted, when the water was agitated, "flashed out from distinct points, each about the size of a threepenny piece." The Ostracoda washed up on the sandy beach also showed phosphorescence when "the ground was trodden near to them." Mr. Shepherd further mentions that "a dozen or so in a little water, when shaken, emitted sufficient light to read a watch-dial."

It was this phosphorescent property which led Mr. A. O. Thiele to gather the specimens I am now describing. In order to ascertain whether this form was similarly phosphorescent, and being aware of the phosphorescence of the Cypridinads generally, as well as to endeavour to establish the identity of Mr. Shepherd's ostracod I wrote to Mr. Thiele, who replied as follows:—"In reply to your query I may mention that it was their extraordinary phosphorescence that attracted my attention. While fishing in the Bay about one mile from the shore in about four fathoms of water, I noticed in pulling up the line that the bait was so luminous that I was able to note the time on my watch. I drew the bait through the partially closed hand and

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<sup>1</sup> Vol. xi., p. 131.

thus felt that it was covered with a mass of granular substance which I wiped off and took home. It was difficult to get the phosphorescence off the hands."

It is noteworthy that Mr. Shepherd observed the phosphorescent ostracods at Brighton about the end of October, on a calm hot night. Mr. Thiele also procured his gathering in warm weather in the beginning of February, and a further supply which he kindly procured for me, in the living condition, he obtained early in July (midwinter), when they were apparently not so numerous in such shallow water as was then explored.

## DESCRIPTION.

Genus—CYPRIDINA.

### *Cypridina thielei*, sp. nov. (Plate IX.)

*Male*.—Carapace seen from the side, subovate, and widest (highest) in the centre. Dorsal margin strongly arched; ventral, evenly but less strongly curved, and depressed at the anterior third. Anterior extremity with a rounded, blunt beak, curving over the antennal sinus, which is central and not very deeply incised. Posterior extremity produced into a beak-like process, convex on the ventral side, concave on the dorsal. Edge view, elongate-ovate, ends nearly equal.

Figured specimen.—Length, 1.9 mm.; height, 1.2 mm.

*Female*.—The form of the carapace nearly resembles that of the male, but is larger, and higher near the middle, with the antero-ventral margin distinctly depressed. The antennal notch is deeper and more open; posterior extremity rounded at the ventral corner, and sub-truncate on the dorsal side, with only the faintest indication of a posterior beak.

Figured specimen.—2.17 mm.; height, 1.33 mm.; thickness of carapace just below the middle, 1 mm.

*General characters*.—Shell thin, polished, and very finely punctate; in places showing opaque spots which apparently increase in size on drying, due to the deposition of phosphate of lime at certain centres. Antennae moderately long for this genus.

Mandibular foot with the conical process at its base, characteristic of Cypridina as defined by G. O. Sars. Vermiform limb with about 6 pairs of fine spines towards the extremity, and two long terminal ones. Caudal lamina with about 13 ungues, gradually decreasing in size from the extremity backwards; the hooks are beset with numerous short spines on the inner surface, to within one-fourth of the tip. Paired eyes large, with about 12 lenses seen in the same plane. Muscle impressions situated about the middle of the anterior third, forming a sub-oval cluster of rounded and elongated spots.

*Observations.*—The present species is a typical Cypridina, not only because of the presence of the conical process at the base of the mandibular foot, but also on account of the absence of the unguinal process seen in *Asterope*; it also shows the blunt, beak-shaped point at the posterior extremity usually possessed by Cypridina. Upon examining living examples of *Cypridina thielei* under the microscope enclosed in the live-box, they were seen to emit a strong steel-blue light for about 10 minutes, and when the luminosity became faint it could be speedily increased by the application of slight pressure. The heart-pulsations, as observed in some living specimens which had been captured about 24 hours previously, and in winter, averaged about 56 per minute.

The carapace of *C. thielei*, has a very interesting structure, for most of the valves, when mounted in media and placed between crossed nicols under the microscope, show various centres of crystallization due to the local formation of radial groups of crystals of phosphate of lime. These groups show the usual dark cross of crystals having a straight extinction. This calcification may be seen on the dried valves as opaque white patches. Sorby mentions this crystalline radial structure which is so eminently developed in crab shells, as occurring also in *Entomostraca*.<sup>1</sup> The same structure is also seen, and in a more advanced stage, in the valves of a species of *Crossophorus*, which Mr. J. H. Gatliff found at Portsea, Port Phillip, Victoria, and kindly favoured me with some short time ago.

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<sup>1</sup> Quart. Journ. Geol. Soc., vol. xxxv., 1879, p. 61.

Although it is assumed from an examination of the already known species of Cypridina that the males only are endowed with swimming power,<sup>1</sup> the present occurrence of females in some abundance on the bait let down off Williamstown seems to show that this species may prove an exception. That the turgid forms were females there can be no doubt, since the eggs were seen in some instances within the valves; the females of this genus hatching their young within the carapace, and not depositing them on water plants like most other Ostracoda. As in the species whose females are non-natatory, the terminal joints of the first pair of antennae in the females of *C. thielei* are not tufted, but the males bear long tufts, which undoubtedly give them greater swimming power.

*Affinities of the Species.*—In the form of the carapace *C. thielei* appears to be quite distinct from any hitherto described species. *C. formosa*, Dana,<sup>2</sup> may be considered one of the nearest allied forms, differing in having subequal extremities viewed laterally, in the sharp anterior beak, and strongly pronounced punctations or depressions on the surface of the valve. Brady's figure of a specimen referred to Dana's species exhibits a blunt beak, as in ours, but the carapace is altogether higher.

The elongate oval outline of the above species is somewhat like that of *C. mediterranea*, Costa,<sup>3</sup> but the latter has a sharp anterior beak, and the edge view shows the carapace to have rounded ends.

*C. megalops*, Sars,<sup>4</sup> also resembles our species in general form, but this also has an acuminate beak, and in the lateral aspect the valves are higher. In its ovately pointed edge-view *C. megalops* agrees with *C. thielei*, but its greatest thickness is below the region where it occurs in the latter.

*Habitat.*—In moderately shallow water in Port Phillip and Hobson's Bay, feeding upon decaying animal matter.

1 Brady, G. S., Rep. Challenger Zool., pt. iii., 1880, p. 151.

2 United States Expl. Exped., Crustacea 1855, p. 1296, pl. xci., fig. 5; also Brady, G. S., Rep. Chall. Zool., pt. iii., 1880, p. 155, pl. xlii., figs. 9-11.

3 "Fauna del Regno di Napoli," 1845 (?), pl. iv., figs. 1-14. See also G. S. Brady, "Mon. Marine and Freshwater Ostracoda of the N. Atlantic and N.W. Europe." Trans. R. Dublin Soc., vol. v., ser. ii., part. xii., 1896, p. 650, pl. liv., figs. 1, 2; pl. lv., figs. 1-11.

4 "Undersøgelser Hardanger Fjordens Fauna, i. Crustacea." Vidensk.-Selsk. Forhandl., p. 278; also Brady, op. supra cit., pl. liv., figs. 5, 6.

The above species is named in honour of Mr. A. O. Thiele, in recognition of his good services in furthering the study of natural history in Victoria.

# EXPLANATION OF PLATE IX.

- Fig. 1.—Right valve of *Cypridina thielei* (♂), with calcified patches on the carapace.  $\times 24$ .  
 „ 2.—Right valve of *C. thielei* (♀), with calcified patches on the carapace.  $\times 24$ .  
 „ 3.—Ventral edge view of carapace of *C. thielei* (♀).  $\times 24$ .  
 „ 4.—Living example of *C. thielei* (♀), showing non-tufted antennae, extended mandible and caudal lamina, with indications of the maxilla, heart, stomach, ova and vermiform limb within the carapace.  $\times 26$ .  
 „ 5.—Muscle impressions seen on the exterior of a valve of *C. thielei*.  $\times 52$ .  
 „ 6.—Vermiform limb.  $\times 65$ .  
 „ 7.—Mandibular foot, showing the conical appendage at its base.  $\times 86$ .  
 „ 8.—One of the hooks of the caudal lamina.  $\times 115$ .
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